

Four new species of *Gnorismoneura* from China (Tortricidae)

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Abstract. Four species of the genus *Gnorismoneura* Issiki & Stringer, 1932 are described from China: *G. grandiprocessa* sp. n., *G. cylindrata* sp. n., *G. serrata* sp. n. and *G. quadrativalvata* sp. n. The females of *G. taeniodesma* (Meyrick, 1934) and *G. zetessima* Razowski, 1977 are first reported. A key to all the described species is provided and the geographical distribution is shown in a map. The genital structures of the new species are illustrated.

Key words. Lepidoptera, Tortricidae, *Gnorismoneura*, new species, China.

Introduction

The genus *Gnorismoneura* Issiki & Stringer, 1932 (type species *G. exulis* Issiki & Stringer, 1932 by original designation) belongs to Ramapesiini, Tortricinae. The species of the genus are mainly distributed in East Asia except for *G. prochyta* (Meyrick, 1908) distributed in India. Razowski revised the genus with 13 species reported in 1977 and redescribed the genus in 1987. The species of the Palaearctic Region were catalogued by the same author (Razowski 1993). Up to date, 11 species from China (Razowski 1977, 1993; Kawabe 1992; Liu 2002), two species from Korea (Byun 1998), four species from Japan (Yasuda 1972, 1975; Kawabe 1982) and one species from Far East of Russia (Kuznetsov 2001) were reported.

In the present paper, the geographical distribution of the described species of the genus is provided (Fig. 1) based on the known data. Four species are described as new to science, and the females of *G. taeniodesma* (Meyrick, 1934) and *G. zetessima* Razowski, 1977 are reported for the first time. All the studied specimens, including the types, are deposited in the Department of Biology, Nankai University, Tianjin, China.

Key to species of *Gnorismoneura* based on male genital characters

- | | |
|--|-----------------------|
| 1. Transtilla with large bifurcate median process | 2 |
| – Transtilla without large bifurcate median process | 3 |
| 2. Uncus long, with a pair of sharp lateral processes; gnathos with long lateral processes | <i>G. zyzogeton</i> |
| – Uncus short and very broad, distinctly expanded terminally; gnathos with short lateral processes | <i>G. orientis</i> |
| 3. Gnathos without distinct lateral processes | 4 |
| – Gnathos with distinct lateral processes | 7 |
| 4. Uncus slender, tapering distally; aedeagus very long, with a long curved dorsal process | <i>G. vallifica</i> |
| – Uncus short, expanded distally; aedeagus short | 5 |
| 5. Sacculus with submedian prominence ventrally | <i>G. taeniodesma</i> |
| – Sacculus normal, without distinct prominence | 6 |
| 6. Socius small; uncus not broadened distally | <i>G. prochyta</i> |
| – Socius large; uncus broadened distally | <i>G. mesoloba</i> |
| 7. Gnathos with short lateral processes | 8 |
| – Gnathos with very long lateral processes | 14 |

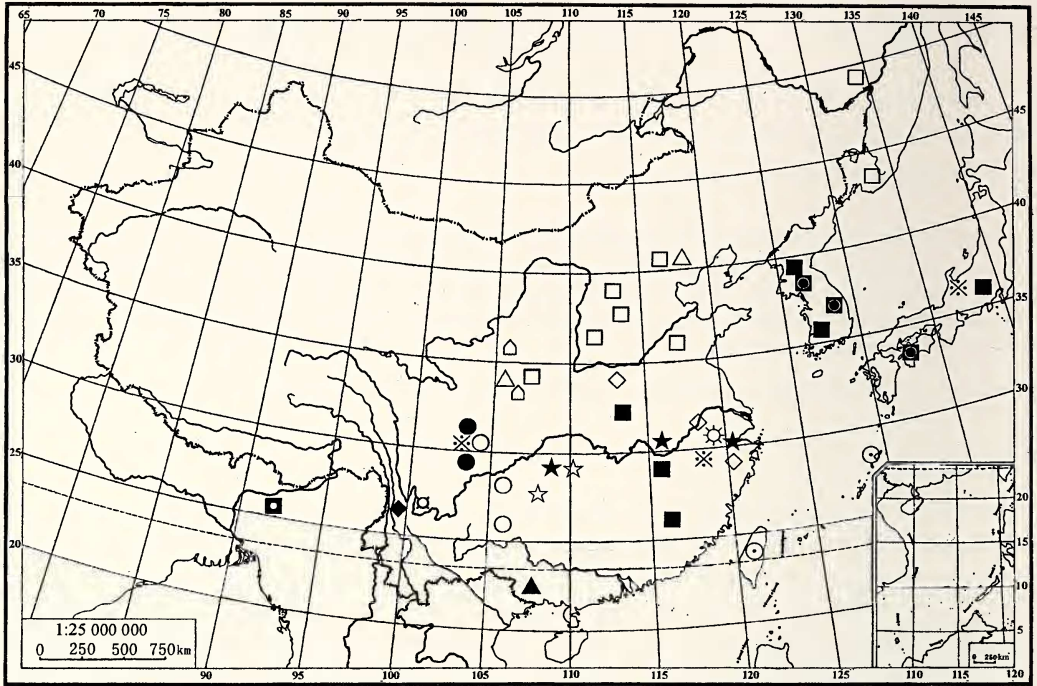
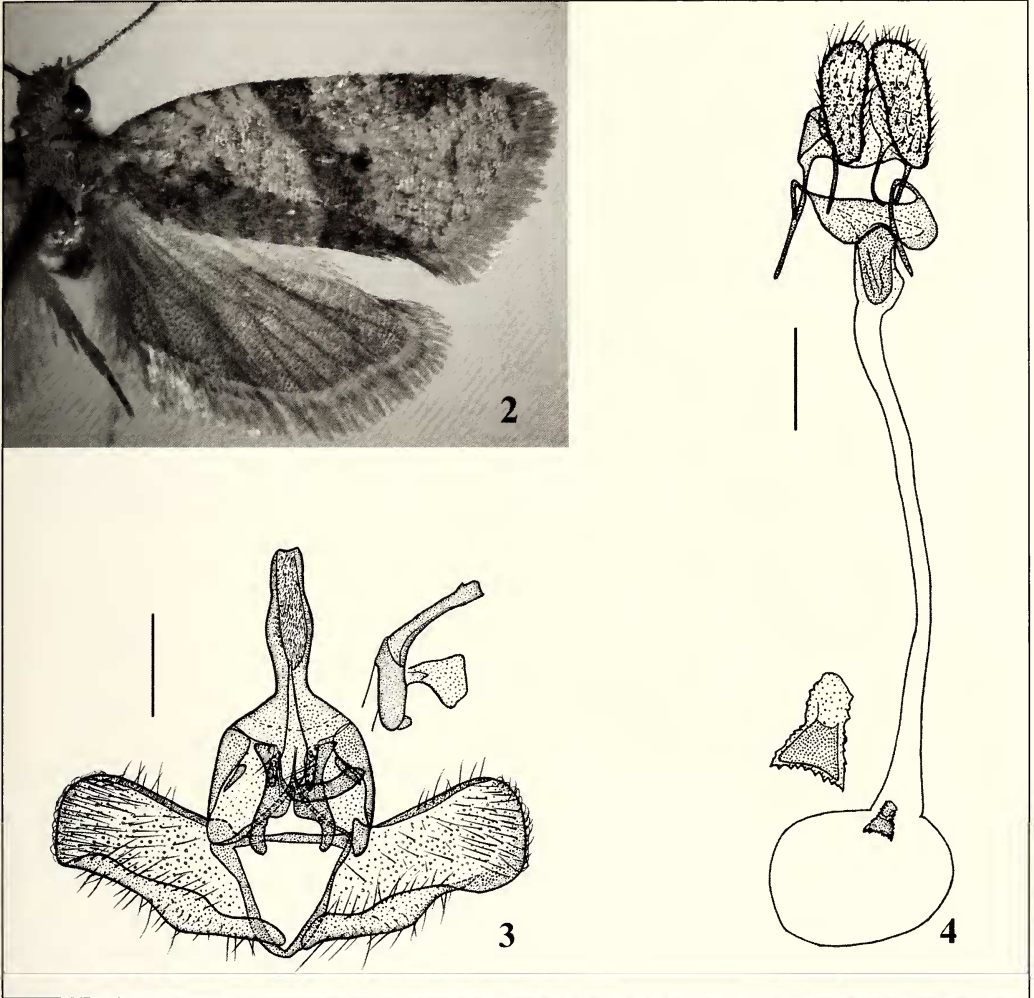


Fig. 1 Distribution of the genus *Gnorismoneura* spp.

Legend: ■ *G. prochyta* (MEYRICK); ■ *G. mesotoma* (YASUDA); ⊙ *G. exulis* ISSIKI & STRINGER; ■ *G. hoshinoi* (KAWABE); ◆ *G. mesoloba* (MEYRICK); □ *G. micronca* (MEYRICK); □ *G. orientis* (FILIPPEV); ● *G. stereomorpha* (MEYRICK); ○ *G. taeniodesma* (MEYRICK); ☆ *G. tragoditis* (MEYRICK); ✱ *G. vallifica* (MEYRICK); △ *G. zetessima* RAZOWSKI; ◇ *G. zyzogeton* RAZOWSKI; ☆ *G. grandiprocessa* sp. n.; ★ *G. cylindrata* sp. n.; ▲ *G. serrata* sp. n.; △ *G. quadrivalvata* sp. n.

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|---|---------------------------------|
| 8. Uncus with a pair of lateral processes; sacculus provided with a bunch of setae submedially and bristles terminally. | <i>G. hoshinoi</i> |
| – Uncus without lateral processes; sacculus normal | 9 |
| 9. Aedeagus short, with dense denticles beyond middle | <i>G. tragoditis</i> |
| – Aedeagus without dense denticles beyond middle | 10 |
| 10. Transtilla folded in middle; sacculus with submedian prominence ventrally | <i>G. exulis</i> |
| – Transtilla without fold in middle; sacculus without prominence ventrally | 11 |
| 11. Sacculus with carina at end | <i>G. stereomorpha</i> |
| – Sacculus without carina at end | 12 |
| 12. Aedeagus broad, without carina, with large lateral prominences of coecum penis | <i>G. micronca</i> |
| – Aedeagus slender, with carina, but without prominences of coecum penis | 13 |
| 13. Uncus rounded apically; aedeagus with dorso-lateral carina subterminally | <i>G. mesotoma</i> |
| – Uncus concave apically; aedeagus with dorsal and ventral carina terminally | <i>G. zetessima</i> |
| 14. Aedeagus with a large upward dorsal carina at middle; sacculus provided with a sharp ventral process at middle. | <i>G. serrata</i> sp. n. |
| – Aedeagus without dorsal process at middle; sacculus without ventral process | 15 |
| 15. Uncus concave apically; sacculus broad | <i>G. grandiprocessa</i> sp. n. |
| – Uncus rounded apically; sacculus narrow | 16 |
| 16. Sacculus narrow, provided with a sharp termination; valva quadrate; aedeagus with small dorsal carina subapically | <i>G. quadrivalvata</i> sp. n. |
| – Sacculus without sharp termination; valva broad, somewhat broadened distally; aedeagus provided with a small ventral prominence subapically | <i>G. cylindrata</i> sp. n. |



Figs. 2–4. *Gnorismoneura grandiprocessa* sp. n. 2. Adult. 3. Male genitalia. 4. Female genitalia (reference bar 0.5 mm).

***Gnorismoneura grandiprocessa* sp. n.**

(Figs. 2–4)

Material. Holotype ♂, **China:** Guizhou Province, Jiangkou County: Mt. Fanjing [27°55'N, 108°41'E], 1700 m, 29.vii.2002, Hou-Hun Li and Xin-Pu Wang leg., genitalia slide No. WXP02259. – Paratypes: 2♀, same data as holotype; ♂, 2♀, same data as holotype, but Mt. Fanjing, 2100 m, 30.vii.2002; 2♂, 9♀, same data as holotype, but Mt. Fanjing, 1300 m, 1.–3.viii.2002; 5♂, 6♀, Hunan Province, Sangzhi County, [29°23'N, 110°41'E], 1250 m, 12.–13. viii. 2002, Hou-Hun Li and Xin-Pu Wang leg.

Adult (Fig. 2). Wingspan 12.0–13.5 mm in male, 15.0–17.5 mm in female. Frons and vertex with erect and rough yellowish scales. Labial palpus dark brown, 1.5 times shorter than diameter of compound eye, third segment thin. Antenna short, ciliate. Tegula developed, brown. Thorax brown. Costa of forewing convex in basal third, then straight, with costal strigulae. Apex short and blunt. Termen oblique and straight. Ground color of forewing yellowish brown; patterns dark brown: basal blotch ambiguous, scattered with brown scales, provided with a small black dot; median

fascia extending from $\frac{1}{3}$ of costa to dorsum, broad posteriorly, with a black dot at middle of outside; subapical blotch subtriangular; cilia pale yellowish. Hindwing dark gray, cilia pale gray. Legs whitish yellow; outer side of foreleg, tibia of midleg black, inner side pale yellowish. Abdomen dark brown dorsally, pale yellowish ventrally.

Male genitalia (Fig. 3). Tegumen broad, lateral sclerite narrow. Uncus large, median part expanded, then distinctly narrowed, somewhat concave apically, with strong bristles distally. Socius slender. Gnathos with dilated termination and strong lateral processes. Transtilla band-like, broadened laterally. Valva broad, costa developed. Sacculus broad, with broad median part. Aedeagus curved, provided with a small dorsal carina subapically.

Female genitalia (Fig. 4). Papilla analis broad. Apophysis posterior with broad basal plate. Lateral portion of sterigma broad. Antrum broad, provided with internal sclerite. Signum a small plate, provided with serrate margin and lateral processes.

Diagnosis. The new species is closely related to *G. zetessima* Razowski, but it can be separated from the latter by the following characters of the male genitalia: (1) Uncus with distinctly narrow portion; (2) Gnathos with strong lateral processes; (3) Sacculus obviously expanded at middle.

Derivatio nominis. The specific name is derived from the Latin words *grandis* (large), and *processus* (process), indicating the large lateral processes of gnathos.

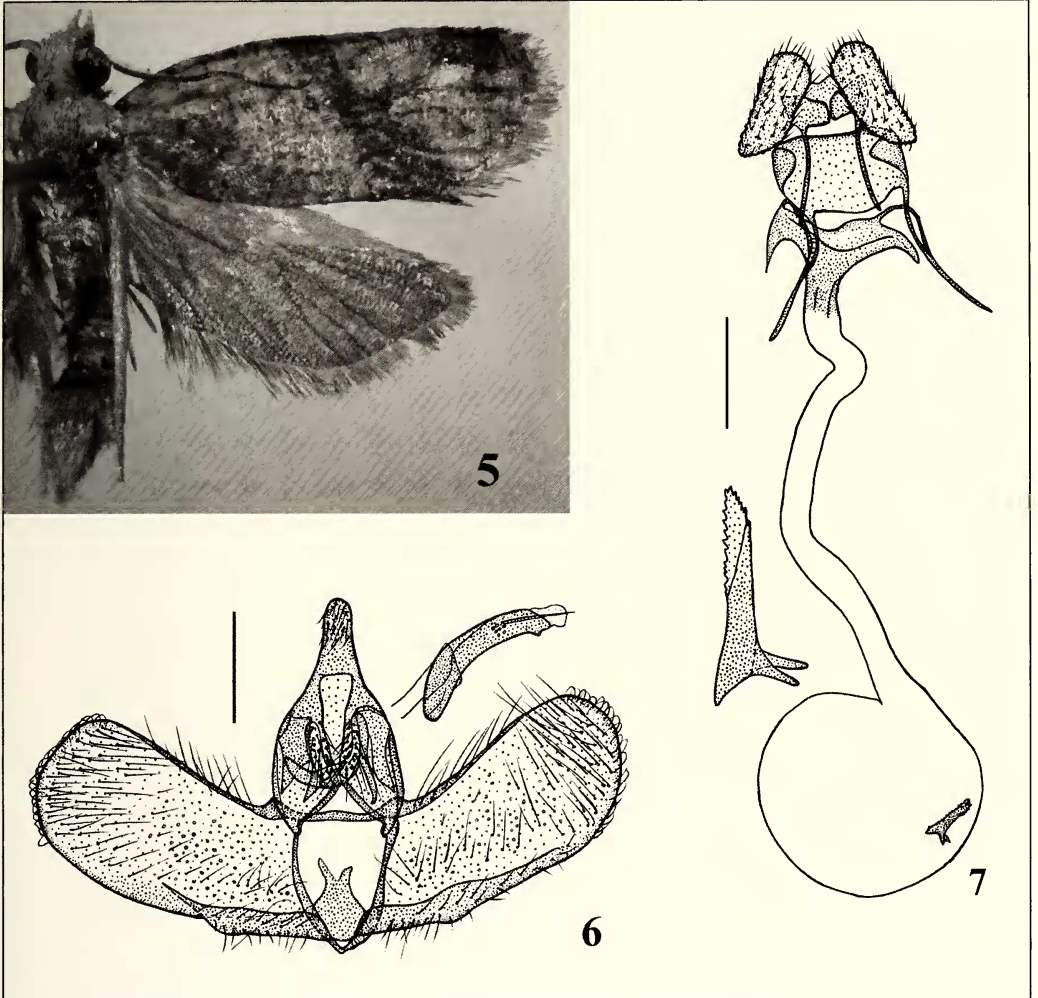
Gnorismoneura cylindrata sp. n.

(Figs. 5–7)

Material. Holotype ♂, **China:** Zhejiang Province, Mt. Tianmu [30°26'N, 119°34'E], 1500 m, 18.viii.1999, Hou-Hun Li et al. leg. – Paratypes: 12♂, 20♀, same data as holotype; 12♂, 6♀, same data as holotype, but 1140 m, 17.viii.1999; 2♂, 8♀, Hubei Province, Wufeng County [30°12'N, 116°40'E], 800 m, 12.–19.viii.1999, Hou-Hun Li et al. leg.; ♀, Hubei Province, Xianfeng County [29°40'N, 109°08'E], 1280 m, 20.vii.1999, Hou-Hun Li et al. leg.

Adult (Fig. 5). Wingspan 12.0–13.5 mm in male, 15.0–18.0 mm in female. Vertex with erect and rough yellow scales. Labial palpus slender, pale yellowish, 1.5 times shorter than diameter of compound eye. Antenna thin. Tegula yellowish. Thorax brown. Costa of forewing convex basally, with some strigulae. Apex short. Termen oblique and straight. Ground color of forewing yellowish brown; patterns dark brown: basal blotch large; median fascia from middle of costa to dorsum, basal half expanded; subapical blotch large; cilia pale gray. Hindwing dark gray, cilia pale gray. Legs whitish yellow; outer side of tarsus of foreleg and midleg with black scales. Abdomen dark brown dorsally, yellowish ventrally.

Male genitalia (Fig. 6) Tegumen broad, lateral sclerite large, erose. Uncus broad basally, columniform distally. Socius large. Gnathos with long termination; lateral processes slender, sharp apically. Transtilla band-formed, somewhat broadened laterally. Valva broad, distal half slightly expanded; costa developed. Sacculus narrow, broadened at middle. Juxta forked apically. Aedeagus stout, provided with a small ventral prominence subapically; caulis and coecum penis short; vesica with a cornutus and a group of seven sclerotized sockets pointing to deciduous cornuti.



Figs. 5-7. *Gnorismoneura cylindrata* sp. n. 5. Adult. 6. Male genitalia. 7. Female genitalia (reference bar 0.5 mm).

Female genitalia (Fig. 7). Papilla analis broad. Apophysis posterior with broad basal plate. Lateral portion of sterigma narrow. Antrum broad, sclerotized weakly. Signum slender, provided with pointed lateral processes.

Diagnosis. The new species is similar to *G. vallifica* (Meyrick), but it can be easily separated from the latter by the following features: (1) Gnathos of the new species with long lateral processes, while gnathos of the latter species without them; (2) Aedeagus stout, provided with a small ventral prominence subapically, but aedeagus of the latter species slender; (3) Signum present in the new species, but absent in the latter species.

Derivatio nominis. The specific name is derived from the Latin word *cylindratus* – columniform, referring to the form of the uncus.

Gnorismoneura serrata* sp. n.*(Figs. 8–10)**

Material. Holotype ♂, **China:** Guangxi Province, Shangsi County [22°09'N, 107°58'E], 510 m, 6.iv.2002, Shu-Lian Hao and Huai-Jun Xue, leg., genitalia slide No. WXP02406. – Paratypes. 5♂, 2♀, same data as holotype.

Adult (Fig. 8). Wingspan 14.0–16.5 mm in male, 18.0–19.5 mm in female. Vertex with rough yellow scales. Labial palpus slender, pale yellowish, 1.5 times shorter than diameter of compound eye. Antenna thin. Tegula developed, yellowish brown. Thorax dark brown. Apex short and blunt. Termen oblique and straight. Forewing broad, ground color yellowish brown, scattered with some short strigulae; patterns black: basal blotch absent; median fascia stretching from middle of costa to dorsum, expanded posteriorly; subapical blotch large; cilia pale gray. Hindwing dark gray, cilia pale. Legs whitish yellow; outer side of tarsus of foreleg and midleg with black scales. Abdomen dark gray dorsally, pale yellowish ventrally.

Male genitalia (Fig. 9). Tegumen broad, lateral sclerite large, sub-elliptic. Uncus narrow distally, rounded apically. Socius thick and long. Gnathos with long termination, lateral processes long, sharp apically. Transtilla band-like, somewhat broadened laterally. Valva broad, more or less broadened distally, costa developed. Sacculus narrow, provided with a sharp ventral process at middle. Juxta broad, forked apically. Aedeagus stout, serrate dorsally, provided with a large upward dorsal carina at middle; caulis strong, coecum penis short; vesica with a group of 10–11 sclerotized sockets pointing to deciduous cornuti.

Female genitalia (Fig. 10). Papilla analis broad. Apophysis posterior with broad basal plate. Sterigma with broad lateral portion. Antrum long, sclerotized weakly, with slender internal sclerite. Signum a broad plate, provided with serrate margin.

Diagnosis. The new species resembles *G. hoshinoi* (Kawabe, 1964), but differs from the latter in: (1) Gnathos with longer lateral processes; (2) Sacculus provided with a sharp process at middle; (3) Aedeagus serrate dorsally, possessing a large upward dorsal carina at middle.

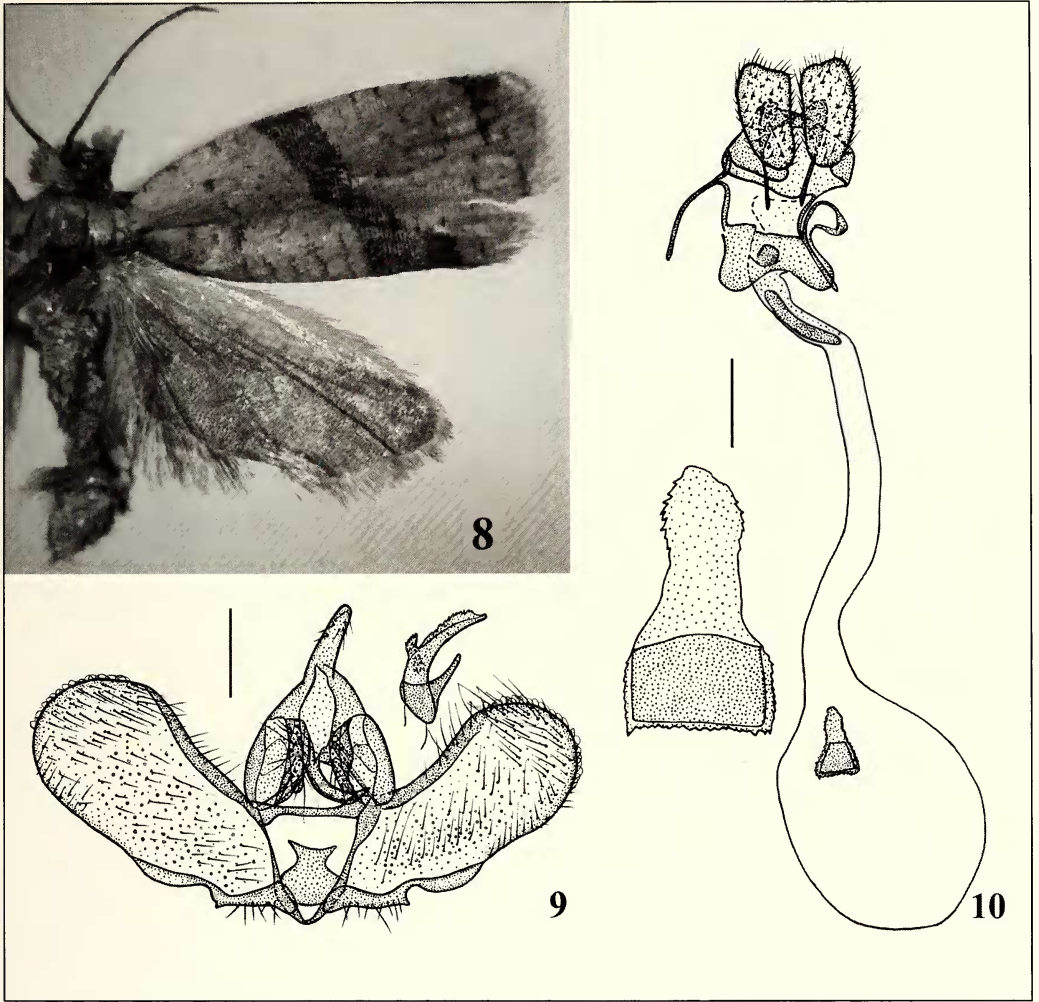
Derivatio nominis. The specific name is derived from the Latin word *serratus* (English: serrate), in reference to a dorsally serrate aedeagus.

Gnorismoneura quadrativalvata* sp. n.*(Figs. 11–13)**

Material. Holotype ♂, **China:** Shaanxi Province, Fengxian County [33°55'N, 106°31'E], 1600 m, 7.vii.1988, Hou-Hun Li leg., genitalia slide No. WXP02246. – Paratypes: 3♀, same data as holotype; 2♂, 2♀, Zhouzhi County [34°10'N, 108°12'E], 1350 m, 14–19.vii.1987, Hou-Hun Li leg.; 2♂, Hebei Province, Zunhua City [40°11'N, 117°58'E], 9.vii.2001, leg. Yan-Li Du and Shu-Lian Hao.

Adult (Fig. 11). Wingspan 13.5–14.5 mm in male, 16.5–18.0 mm in female. Labial palpus thin and short, pale yellowish, 1.5 times shorter than diameter of compound eye. Antenna thin. Thorax brown. Apex short. Termen oblique and straight. Forewing broad, ground color yellowish brown; patterns dark brown: basal blotch small; median fascia broad posteriorly; subapical blotch large; cilia pale gray. Hindwing dark gray, cilia pale gray. Legs whitish yellow, outer side of tarsus of foreleg with black scales. Abdomen yellowish dorsally, pale yellowish ventrally.

Male genitalia (Fig. 12). Tegumen broad, lateral sclerite large, boot-shaped. Uncus short, broadening toward distal, with a small point at apex. Socius slender. Gnathos with broad plate terminally, lateral processes very long, sharp apically.



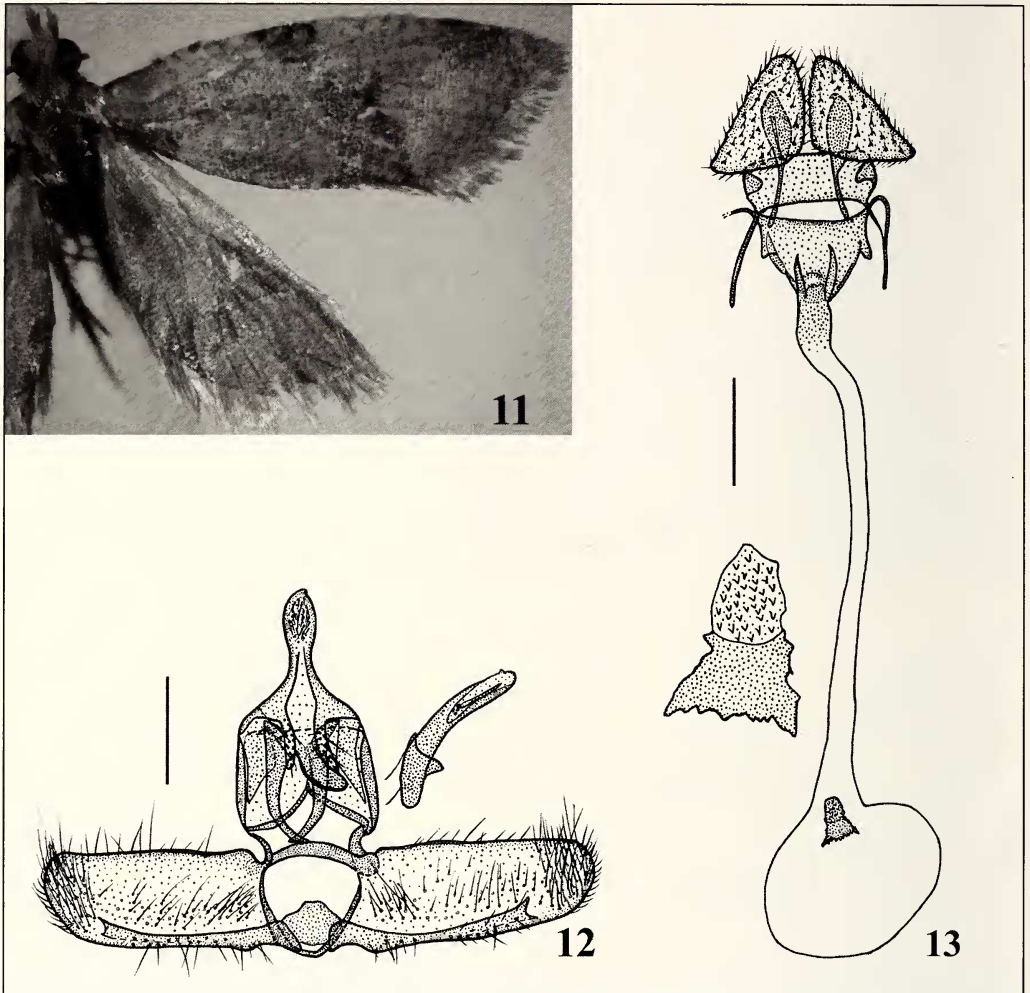
Figs. 8–10. *Gnorismoneura serrata* sp. n. 8. Adult. 9. Male genitalia. 10. Female genitalia (reference bar 0.5 mm).

Transtilla band-formed, somewhat convex medially. Valva long, quadrate. Sacculus narrow, provided with a sharp termination. Juxta broad. Aedeagus stout, provided with a small dorsal carina apically; caulis and coecum penis short; vesica with four cornuti.

Female genitalia (Fig. 13). Papilla analis broad, triangular. Apophysis posterior with broad basal plate. Lateral portion of sterigma very small. Antrum broad, weakly sclerotized. Signum a broad plate, provided with serrate margin and lateral processes.

Diagnosis. The new species is allied to *G. mesotoma* (Yasuda), but it can be distinguished from the latter by the following characters: (1) Gnathos with much longer lateral processes; (2) Sacculus provided with a sharp carina at end; (3) Aedeagus with a very small carina; (4) Papilla analis triangular in the new species.

Derivatio nominis. The specific name is from the Latin words *quadratus* – quadrate, and *valvatus* – valva, referring to the shape of valva.



Figs. 11–13. *Gnorismoneura quadrivalvata* sp. n. **11.** Adult. **12.** Male genitalia. **13.** Female genitalia (reference bar 0.5 mm).

***Gnorismoneura taeniodesma* (Meyrick, 1934)**

(Fig. 14)

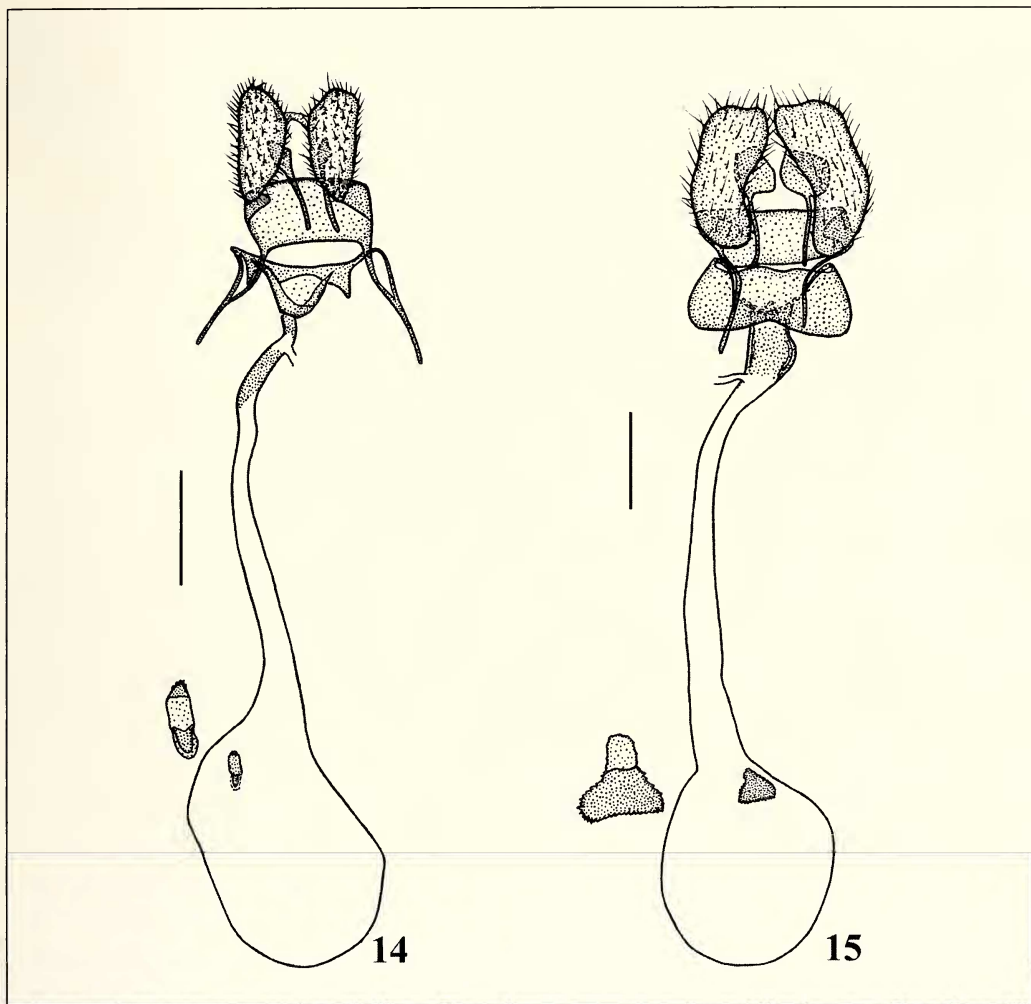
Capua taeniodesma Meyrick, 1934, Exot. Microlepid., 4: 525. *Gnorismoneura taeniodesma* (Meyrick, 1934): Razowski 1977, Polsk. Pismo Ent. 47: 590, figs. 15, 16.

Material. 2♂, 4♀, **China:** Guizhou Province, Chishui County [28°34'N, 105°42'E], 390 m, 27.–29.v.2000, Yan-Li Du leg.; ♂, 6♀, Guizhou Province, Xishui County [28°19'N, 106°12'E], 500 m, 31.v.2000, Yan-Li Du leg.; 5♂, 3♀, Guizhou Province, Chishui County [28°34'N, 105°42'E], 240 m, 21.–22.ix.2000, Hai-Li Yu leg.; 21♂, 9♀, Guizhou Province, Xishui County [28°19'N, 106°12'E], 500 m, 24.–29.ix.2000, Hai-Li Yu leg.

Female. Wingspan 16.5–18.0 mm, other characters same as in male.

Female genitalia (Fig. 14). Papilla analis broad. Apophysis posterior short, with broad basal plate. Lateral portion of sterigma small. Antrum narrow, sclerotized weakly. Base of ductus bursae sclerotized weakly. Signum small.

Notes. Razowski did not describe the female genitalia in 1977 because of lacking



Figs. 14–15. Female genitalia of *Gnorismoneura* spp. 14. *G. taeniodesma* (Meyrick). 15. *G. zetessima* Razowski (reference bar 0.5 mm).

female abdomen. It is described for the first time in this paper. The female genitalia of *G. taeniodesma* resembles the female genitalia of *G. mesoloba* (Meyrick, 1937), but without distinct sclerite in antrum.

***Gnorismoneura zetessima* Razowski, 1977**

(Fig. 15)

Gnorismoneura zetessima Razowski, 1977, *Polsk. Pismo Ent.* 47: 591, figs. 17, 18.

Material. **China:** 2♂, 4♀, Ningxia (Jingyuan County [35.29N, 106.19E], 2400 m), 7–8.viii.2000, Hou-Hun Li and Shu-Xia Wang leg.; ♂, Shaanxi Province (Fengxian County [33.55N, 106.31E]), 11.vii.1988, Hou-Hun Li leg.

Female. Wingspan 18.5–21.0 mm, other characters same as in male.

Female genitalia (fig. 15). Papilla analis very broad. Apophysis posterior short, with very broad basal plate. Lateral portion of sterigma broad. Antrum broad, with

internal sclerite. Signum a broad plate, provided with serrate margin.

Notes. We have found the female and describe it here for the first time. The female genitalia of *G. zetessima* is similar to that of *G. stereomorpha* (Meyrick, 1931), but can be differentiated from it by broader antrum and longer inner sclerite.

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